ISBN 1188–4169

Canada Communicable Disease Report

FAX

Vol . 23–19

Date of publication: 1 October 1997

Contained in this FAX issue: *(No. of pages: 5)*

		Official page numbers:
OUTBREAK OF *VIBRIO PARAHAEMOLYTICUS* RELATED TO RAW OYSTERS IN BRITISH COLUMBIA	F-1	145 – 148
OUTBREAK OF *SALMONELLA ENTERITIDIS* PHAGE TYPE 8 IN A MONTREAL HOTEL	F-3	148 – 150
A CASE OF HUMAN RABIES CONTRACTED IN NIGERIA	F-4	151
ANNOUNCEMENT	F-5	151 – 152

For reference purposes, citing should refer to the page numbers of the printed copy and not to those of the FAX copy (F-#).

OUTBREAK OF *VIBRIO PARAHAEMOLYTICUS* RELATED TO RAW OYSTERS IN BRITISH COLUMBIA

During July and August, 1997, British Columbia (BC) experienced an outbreak of *Vibrio parahaemolyticus* (VP) gastroenteritis associated with consumption of raw and undercooked oysters. VP is a naturally occurring, halophilic bacterium which can be found in BC's coastal waters and, at least during the summer months, in marine shellfish[1]. This report presents the preliminary findings of the outbreak investigation by the BC Centre for Disease Control (BCCDC), the Canadian Food Inspection Agency (CFIA), regional health units, and the BC Ministry of Health, Food Protection Programs.

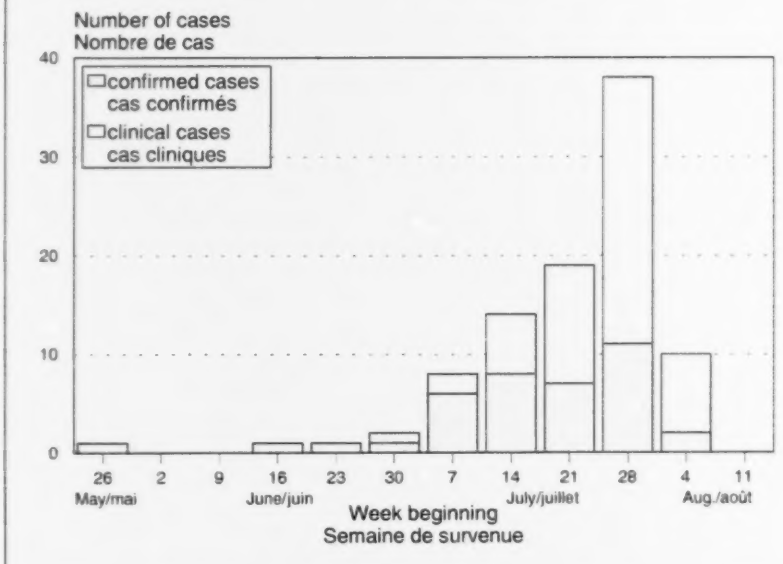
The outbreak was detected during the third week of July when the monthly number of VP isolates received by the Provincial Laboratory, BCCDC, reached nine. This was more than double the expected number of cases based on historical reporting in the province. Initial follow-up of the nine cases found that at least six had eaten raw oysters in the 24 hours before becoming ill.

A standard questionnaire was administered to all laboratory-confirmed cases reported to health units in BC. Shellfish consumed by cases were traced back to their sources and, where possible, samples were taken for laboratory analysis. To assist with the tracing of shellfish, exposure data were also collected from clinical cases. A clinical case was defined as any person suffering from diarrhea with three or more loose or watery stools in a 24-hour period within 3 days of eating raw or undercooked shellfish in the province.

Preliminary Results

Between 1 July and 21 August 1997, 43 laboratory-confirmed cases of VP gastrointestinal infection were reported to BCCDC. Surveillance for clinical cases started on 5 August, and by 21 August, 57 clinical cases had been reported. Figure 1 shows the illness onset dates for confirmed and clinical cases. Onset dates ranged from 19 June to 10 August. The number of cases peaked during the week beginning 28 July and then declined sharply.

Figure 1
Cases of *Vibrio parahaemolyticus* gastroenteritis, clinical and confirmed, by week of onset, British Columbia, July and August 1997



Health Canada Santé Canada

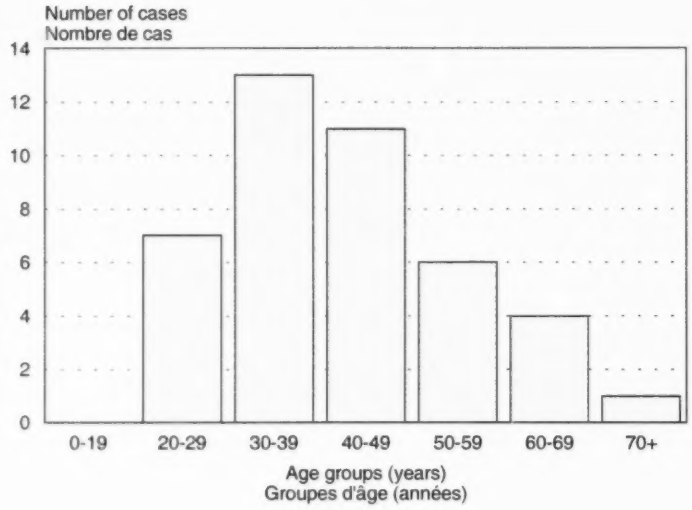
Canada

Thirty-nine of the 43 confirmed cases were available for interview. Sixty-seven percent (26/39) were male. The ages ranged from 21 to 79 years with a mean age of 42 years (Figure 2). All interviewed cases (39/39) reported diarrhea, 87% (34/39) had abdominal pain, 38% (15/39) had nausea, 36% (14/39) had vomiting, 33% (13/39) had fever, and 5% (2/39) had blood in their stools. One case was hospitalized.

A food history was obtained from 39 laboratory-confirmed cases. Thirty-four had eaten raw or undercooked oysters prior to onset of symptoms. Of the five cases who had not eaten oysters, two had eaten crabs, one had eaten clams, one had swum extensively in the ocean, and one had attented a banquet where raw oysters were served. Twenty-eight of the 34 cases who had eaten oysters had purchased them at restaurants or other food establishments in BC, and six cases had eaten oysters which they had harvested from BC beaches.

Of the 57 clinical cases, 95% (54/59) had eaten raw or undercooked oysters prior to illness onset. Twenty-one of the 54 had harvested the oysters themselves. Oysters related to cases were traced back to numerous different harvesting areas on the BC coast. Samples of oysters from these areas were tested and found to contain VP. However, the organism was present in the range of less than 100 to 200 colony forming units (CFU) per gram of oyster tissue, a level which is lower than is thought necessary to cause human illness. One confirmed case had eaten oysters from Prince Edward Island as well as oysters from BC. An initial investigation of oyster processing and distribution did not reveal deficiencies that could account for the outbreak.

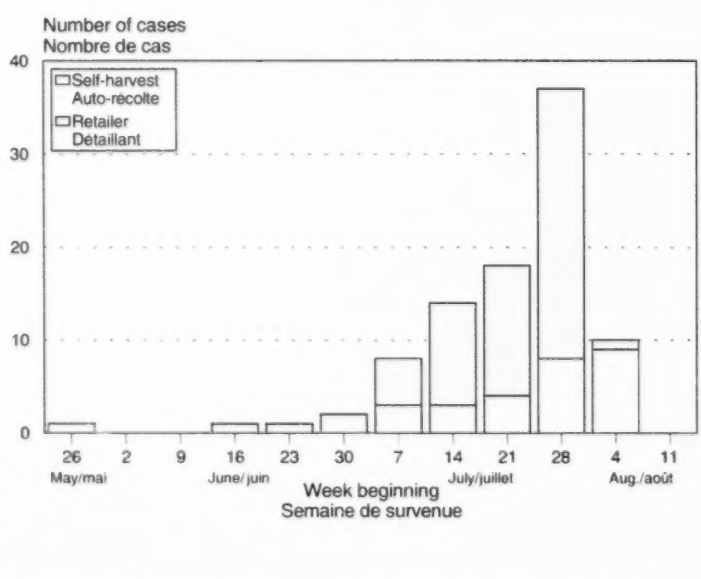
Figure 2
Age distribution of confirmed cases of *Vibrio parahaemolyticus* gastroenteritis, British Columbia, July and August 1997



Control Measures

On 30 July, the BC Ministry of Health issued a public health alert, advising that shellfish should not be eaten raw or undercooked. On 31 July, the Vancouver/ Richmond Health Board banned the sale of raw shellfish at restaurants and bars within the cities of Vancouver and Richmond. In the week following these two actions, the number of cases of VP infection reported in BC declined rapidly, particularly cases related to oysters purchased in restaurants (Figure 3). On 19 August 1997, the Federal Department of Fisheries and Oceans, acting on recommendations by the CFIA, closed BC's coastal waters to the harvesting of oysters. An investigation of the environmental factors which may have led to this outbreak is ongoing.

Figure 3
Cases of *Vibrio parahaemolyticus* gastroenteritis, by week of onset and source of oysters, British Columbia, July and August 1997



Reference

1. Kelly MT, Stroh EM. *Occurrence of **Vibrionaceae** in natural and cultivated oyster populations in the Pacific Northwest.* Diagn Microbiol Infect Dis 1988;9(1):1-5.

Source: *M Fyfe, MD, CD Epidemiology, BCCDC; ST Yeung, MD, Field Epidemiology Training Program, Health Canada; P Daly, MD, Vancouver/Richmond Health Board; K Schallie, CFIA; MT Kelly, MD, Provincial Laboratory, BCCDC; S Buchanan, Food Protection Programs, BC Ministry of Health.*

OUTBREAK OF *SALMONELLA ENTERITIDIS* PHAGE TYPE 8 IN A MONTREAL HOTEL

On 4 November 1995, three cases of gastroenteritis were reported to the *Direction de la santé publique* (DSP) *de Montréal-Centre*; two tested positive for *Salmonella* sp. All had attended a national convention held at a Montreal hotel from 22 to 27 October. By 6 November, a total of 21 cases from across Canada had been reported to the DSP. All had been guests at the same hotel.

Investigation

On 9 and 10 November, the hotel kitchen and the various foodhandling techniques were examined. Samples of food served between 19 and 27 October were not available, but samples of 30 food items prepared on 9 and 10 November were taken for testing.

On 13 November, copies of a questionnaire were sent to the 265 convention guests who had stayed at the hotel. In the meantime, the stool specimens positive for *Salmonella* were sent to the Laboratory Centre for Disease Control in Ottawa for further characterization. At the beginning of December, staff from Agriculture and Agri-Food Canada inspected the premises of egg suppliers.

Results

One hundred and sixty of the 265 hotel guests (60.4%) completed the questionnaire. Sixty-nine (43%) met the definition for either a clinical or confirmed case of salmonellosis. A clinical case had one of the following symptoms: fever, vomiting, abdominal cramps, or diarrhea; a confirmed case had a stool culture positive for *S. enteritidis* or *Salmonella* serogroup D. Common symptoms were diarrhea (91.1%), abdominal cramps (80.6%), and fever (60.6%). Four of the 69 cases (5.8%) were hospitalized for an average of 3.5 days. Fourteen (20.3%) were positive for *S. enteritidis*, phage type 8. Analysis of 12 isolates showed a plasmid profile and sensitivity to identical antibiotics. No other organism was identified. The epidemic curve is shown in Figure 1. It should be pointed out that an error had been made in the English version of the questionnaire regarding the time period for onset of symptoms. Respondents were asked to specify if the onset of their symptoms had occurred between 19 and 27 October 1995 instead of between 19 October and 3 November 1995. Obviously, those who indicated that their symptoms had first appeared on a date between 27 October and 3 November 1995 were considered as cases.

The kitchen inspection revealed no major foodhandling violations. Food samples collected on 9 and 10 November were negative for *Salmonella*. However, mayonnaise-based dips, prepared with approximately 60 raw eggs, were served on the evenings of 19, 21, and 25 October. A peach soufflé containing raw eggs was served for lunch on 26 October. A correlation exists between dates that mayonnaise-based dips were served and incidence of illness. Analysis of specific attack rates per meal shows a statistically significant association between the lunch served on 26 October and illness (RR = 9.30; $p < 0.0003$).

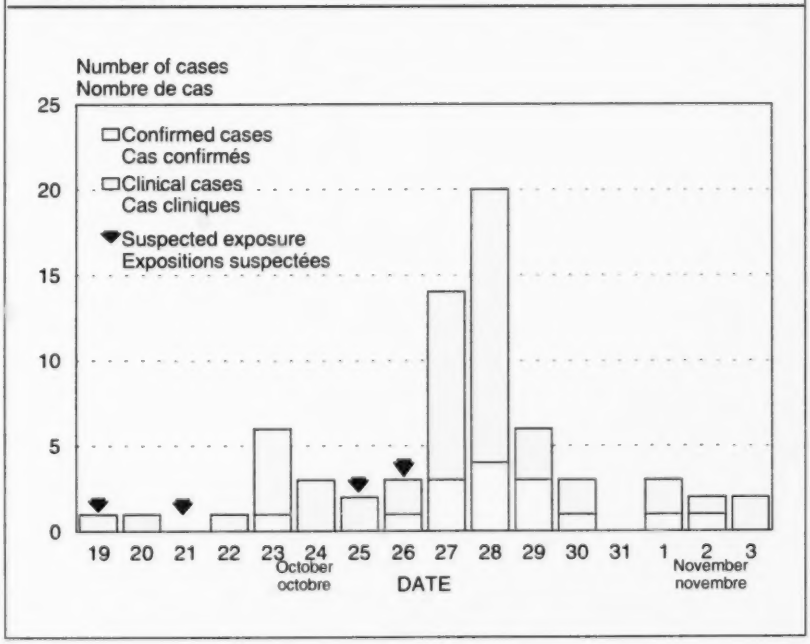
The source of the eggs was traced to nine groups of laying hens. Tests on four dozen eggs from each group, including the rinse water, were negative for *Salmonella*.

Discussion

In many industrialized countries, the incidence of *S. enteritidis* infections in humans has increased dramatically over the last few years[1,2]. In Canada, between 1976 and 1989, *S. enteritidis* was one of the five most frequently identified serovars among *Salmonella* isolates from humans[3]. In 1991, it ranked as the second most commonly isolated serovar[4]. In Quebec, an increase is noted in the number of group D isolates — in particular *S. enteritidis* — identified between the periods 1973 to 1982, and 1990 to 1995 (unpublished observations, *Laboratoire de santé publique du Québec*). Many American and European investigations have shown that meals prepared with raw eggs have contributed to an increase in outbreaks due to *S. enteritidis*[1,5-11].

Food consumed at the hotel was the common link among all the reported cases and the most probable cause of this outbreak. The 10-day delay before notifying the health authorities made a detailed food investigation impossible. The evidence was circumstantial but highly suggestive that the consumption of raw eggs and the occurrence of salmonellosis were associated. Raw eggs were used many times during the week and in food consumed 24 to 48 hours before the onset of symptoms. The epidemiologic and microbiologic data suggest that transmission was through the

Figure 1
Epidemic Curve of an Outbreak of Salmonellosis in a Montreal Hotel, by Date of Onset of Symptoms



mayonnaise-based dips and the soufflé, which were prepared with raw eggs contaminated with *S. enteritidis* phage type 8. The epidemic curve shows two cases with onset on 19 and 20 October, a small peak (six cases) on 23 October, and two larger peaks on 27 and 28 October (total: 34 cases), suggesting that *S. enteritidis* was introduced several times during the week, i.e. on 19, 21, 25, and 26 October corresponding to the serving of the food items prepared with raw eggs.

This outbreak demonstrates the importance of using pasteurized eggs in preparing food.

Acknowledgements

We wish to thank J. Harvey, Ottawa, C. Vézina, *Direction de l'inspection des aliments de la Communauté urbaine de Montréal*, E. Stratton, LCDC, the services of provincial laboratories, and Agriculture and Agri-Food Canada for their collaboration in this investigation. We also appreciate the collaboration of R. Allard, L. Bédard, D. Deshaies, P. Le Guerrier, and H. Rodrigue of the *Direction de la santé publique, Régie régionale de la santé et des services sociaux de Montréal-Centre.*

References

1. St. Louis ME, Morse DL, Potter ME et al. *The emergence of grade A eggs as a major source of* ***Salmonella enteritidis*** *infections: new implications for the control of salmonellosis.* JAMA 1988;259:2103-7.
2. Rodrigue DC, Tauxe RV, Rowe B. *International increase in* ***Salmonella enteritidis****: a new pandemic?* Epidemiol Infect 1990;105:21-7.
3. Khakhria R, Duck D, Lior H. *Distribution of* ***Salmonella enteritidis*** *phage types in Canada.* Epidemiol Infect 1991;106:25-32.
4. Poppe C. ***Salmonella enteritidis*** *in Canada.* Int J Food Microbiol 1994;21:1-5.
5. Telzak EE, Budnick LD, Zweig Greenberg MS et al. *A nosocomial outbreak of* ***Salmonella enteritidis*** *infection due to the consumption of raw eggs.* N Engl J Med 1990;323:394-97.
6. Mishu B, Griffin PM, Tauxe RV et al. ***Salmonella enteritidis*** *gastroenteritis transmitted by intact chicken eggs.* Ann Intern Med 1991;115:190-94.
7. CDC. *Outbreak of* ***Salmonella enteritidis*** *infection associated with consumption of raw shell eggs, 1991.* MMWR 1992;41:369-72.
8. Vugia DJ, Mishu B, Smith M et al. ***Salmonella enteritidis*** *outbreak in a restaurant chain: the continuing challenges of prevention.* Epidemiol Infect 1993;119:49-61.
9. CDC. *Outbreaks of* ***Salmonella enteritidis*** *gastroenteritis, California, 1993.* MMWR 1993;42:793-97.
10. Cowden JM. ***Salmonellosis*** *and eggs: public health, food poisoning, and food hygiene.* Curr Opin Infect Dis 1990;3:246-49.
11. Cox JM. ***Salmonella enteritidis****: the egg and I.* Aust Vet J 1995;72:108-15.

Source: *PA Pilon, MD, M Laurin, MSc, Direction de la santé publique, Régie régionale de la santé et des services sociaux, Montréal-Centre, Montreal, QC.*

International Notes

A CASE OF HUMAN RABIES CONTRACTED IN NIGERIA

A 19-year-old man, who had returned to England from Nigeria 3 weeks previously, developed fever and altered behaviour. He was admitted to a London hospital on Sunday, 6 October 1996. He was aggressive and confused, hyperventilating, and had spasms that lasted for a few seconds. He would not allow health-care workers to examine him, and he spat saliva on the people who restrained and sedated him. Malarial parasites were seen in blood films. A diagnosis of cerebral malaria was made; he was treated with quinine, and transferred to another hospital. He suffered two cardiorespiratory arrests and died later the same day. A clinical diagnosis of rabies was made and was confirmed by the Central Veterinary Laboratory, Weybridge, by direct immunofluorescence and polymerase chain reaction, and culture of rabies virus from tissue specimens obtained at necropsy.

Post-exposure prophylaxis (vaccine and immunoglobulin) was provided for close contacts of the patient. Inquiries revealed that the patient had been bitten on the ankle by a stray dog in Nigeria. Neither the date of the bite nor details of any treatment given are known.

No indigenous cases of human rabies have occurred in the United Kingdom since 1902, and only 20 cases have been imported into England and Wales since 1946. Person-to-person transmission of rabies is very rare. A theoretic risk of transmission through infected body fluids exists, but the only documented cases of person-to-person transmission occurred in people who received corneal transplants from donors who died of undiagnosed rabies. The diagnosis can be confirmed during life by detecting rabies virus antigens in corneal impressions or skin biopsies.

Vaccination with three doses of human diploid cell rabies vaccine is recommended for people living or travelling in enzootic areas who may be exposed to unusual risks, or who undertake particularly long journeys in remote areas where medical treatment may not be immediately available.

Source: *WHO Weekly Epidemiological Record, Vol 72, No 22, 1997.*

Announcement

APPLICATIONS FOR THE FIELD EPIDEMIOLOGY TRAINING PROGRAM

Applications for the Field Epidemiology Training Program (FETP) class beginning July 1998 are due 31 October 1997.

The FETP invites applications from residents of Canada for its 2-year salaried training positions with the Laboratory Centre for Disease Control (LCDC). If you are interested in learning more about this program, please visit the LCDC website at http://www.hc-sc.gc.ca/hpb/lcdc

Applications must be sent to the Public Service Commission of Canada in Ottawa by fax at (613) 996-8048, or via their website at http://www.psc-cfp.gc.ca/jobs.htm

You may contact us by e-mail at fetp@hpb.hwc.ca, by fax at (613) 941-6028, or by mail at FETP, 0602B, Tunney's Pasture, Ottawa, ON, K1A 0L2.

Please mention competition numbers SH76207GD12 (physicians) or SH76206GD12 (health professionals).

As an equal opportunity employer, Health Canada is committed to achieving a skilled, diversified workforce that reflects the diversity of the Canadian population. We encourage members of the following designated groups to apply and also to self-identify: women (especially in non-traditional occupational groups), members of a visible minority group, Aboriginal people, and persons with a disability.

We welcome applications from all persons committed to public health. These positions are not suitable for foreign medical graduates seeking credit towards licensure in Canada, because the experience is not equivalent to Canadian post-graduate training in a specialty. For those currently enrolled in some specialty training programs, however, one of the 2 years may be considered acceptable to your program. Such decisions are made by your program director in consultation with the Royal College of Physicians and Surgeons and the FETP.

Our mission is
to help the people of Canada
maintain and improve their health.

Health Canada

The Canada Communicable Disease Report (CCDR) presents current information on infectious and other diseases for surveillance purposes and is available through subscription. Many of the articles contain preliminary information and further confirmation may be obtained from the sources quoted. Health Canada does not assume responsibility for accuracy or authenticity. Contributions are welcome (in the official language of your choice) from anyone working in the health field and will not preclude publication elsewhere.

Scientific Advisors	Dr. John Spika	(613) 957-4243
	Dr. Fraser Ashton	(613) 957-1329
Editor-in-Chief	Eleanor Paulson	(613) 957-1788
Assistant Editor	Nicole Beaudoin	(613) 957-0841
Desktop Publishing	Joanne Regnier	

Submissions to the CCDR should be sent to the Editor-in-Chief, Laboratory Centre for Disease Control, Tunney's Pasture, Address Locator 0602C2, Ottawa, Ontario K1A 0L2.

To subscribe to this publication, please contact:
MSC Representative — Tel. No.: (613) 731-8610, ext. 2028
Canadian Medical Association — FAX: (613) 731-9102
1867 Alta Vista Drive
Ottawa, Canada K1G 3Y6

Price per year:
Base subscription: $80.00 ($85.60 incl. G.S.T.) in Canada; $105 (U.S.) outside Canada.
Premium subscription: $150.00 ($160.50 incl. G.S.T.) in Canada; $175 (U.S.) outside Canada.